

Remarks

This Amendment responds to the Office Action dated 9 November 2005.

In addition, this Amendment is accompanied by a Supplemental Information Disclosure Statement and the requisite fees therefor.

For the Claims:

The 9 November 2005 Office Action examined all claims (i.e., claims 1-52). The Office Action rejected claims 1-7, 11-12, 19, 21, 24, 26-29, 34, 38-43, 47-48, and 51 and objected to claims 8-10, 13-18, 20, 22, 23, 25, 30-33, 35-37, 44-46, 49, 50, and 52. The Office Action rejected claims 1-6, 11-12, 19, 21, 24, 26-29, 42-43, and 47 under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* (U.S. Patent No.6,335,767). The Office Action rejected claims 7, 34, 38-39, 48, and 51 under 35 U.S.C. 103(a) as being unpatentable over *Twitchell et al.* in view of *Sarca* (U.S. Published Application 2005/0123066). The Office Action indicated that objected-to claims 8-10, 13-18, 20, 22, 23, 25, 30-33, 35-37, 44-46, 49, 50, and 52 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The present amendment amends independent claim 1 by merging all limitations from claims 5 and 6 therein. Claims 5-6 are canceled because their limitations have been merged into claim 1. Claim 7 has been amended to change the dependency from claim 6 to claim 1 and maintain consistency with the cancellation of claim 6. Claims 10 and 16-17 have been canceled, but their limitations are presented in new claims 55 and 60-61, respectively. The present

amendment cancels independent claim 34 and claims 35-41 which depend from claim 34. Independent claim 42 is amended by removing the word "and" at the end of the linear predistorter element to make the list of elements more readable and not for reasons of patentability. Independent claim 48 is amended by adding a limitation similar to that previously presented in objected-to claim 15. Dependent claims 50-52 are each amended to maintain consistency with amended independent claim 48.

A new claim 53 is presented which includes limitations previously included in claim 1 and additional limitations that, in combination with these limitations, are believed to make claim 53 allowable.

The Office Action objected to claims 9-10 as being dependent upon a rejected base claim. A new claim 54 is presented as an independent claim that includes all limitations of claim 9 and claim 1 from which claim 9 depends. A new claim 55 which includes all the limitations of claim 10 depends from new claim 54.

The Office Action rejected claim 11 under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* A new claim 56 includes all limitations of claims 1 and 11.

The Office Action objected to claim 13 as being dependent upon a rejected base claim. A new claim 57 is presented as an independent claim that includes all limitations of claim 13 and claim 1 from which claim 13 depends.

The Office Action objected to claim 14 as being dependent upon a rejected base claim. A new claim 58 is presented as an independent claim that includes all limitations of claim 14 and claim 1 from which claim 14 depends.

The Office Action objected to claims 15-17 as being dependent upon a rejected base claim. A new claim 59 is presented as an independent claim that includes all limitations of claim 15 and claim 1 from which claim 15 depends. Each of new claims 60-61, which respectively include the limitations of claims 16-17, depends from new claim 59.

The Office Action objected to claim 20 as being dependent upon a rejected base claim. A new claim 62 is presented as an independent claim that includes all limitations of claim 20 and claim 1 from which claim 20 depends.

The Office objected to claim 49 as being dependent upon a rejected base claim. A new claim 63 is presented as an independent claim that includes all limitations of claim 49 and claim 48 from which claim 49 depends.

Claim 1

The present amendment amends independent claim 1 by merging all limitations from claims 5 and 6 therein. The Office Action rejected claim 6 under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Reconsideration is respectfully requested.

The prior claim 6 and the current claim 1 include the following limitation:

down-converting a feedback signal obtained from said analog-transmitter components using a digital-subharmonic-sampling downconverter to generate a return-data stream;

With respect to the prior claim 6, the Office Action alleged that *Twitchell et al.* taught this limitation, as evidenced by the

Twitchell et al. Fig. 5 and element 46. Applicant respectfully requests reconsideration.

The background section of applicant's specification details several problems that have plagued prior attempts at implementing digital predistortion. One of these problems is discussed in paragraph [0019]. In particular, analog processing performed on the RF feedback signal prior to digitization introduces distortion that cannot be removed through a predistorter. This is precisely the type of flawed processing that *Twitchell et al.* teaches, and it is not the method applicant claims in claim 1 by reciting the use of "a digital-subharmonic-sampling downconverter".

Element 46 depicted in Fig. 5 of *Twitchell et al.* is a box from a block diagram. As is conventional for block diagram representations, that box represents a variety of components that work together to provide a named function. The labeling of the box recites "ADAPTIVE DETERMINATIONS (with down converter/ADC)". The box represents a specified function that is referenced with the words ADAPTIVE DETERMINATIONS plus a down converter and an analog-to-digital converter (ADC). There is absolutely no suggestion of a digital-subharmonic-sampling downconverter from Fig. 5. Element 46 is discussed in the *Twitchell et al.* specification at column 9 lines 17-29, but this paragraph makes absolutely no mention of down conversion or ADC functions. Thus, this paragraph provides absolutely no suggestion of a digital-subharmonic-sampling downconverter as applicant claims in claim 1. Without explicitly referencing element 46, this feature is also discussed in *Twitchell et al.* at column 3 lines 39-45 thus:

A down converter receives output radio frequency carrier television signals from the filter and amplifier circuits for down converting the output signals. An analog-to-digital converter converts the down converted analog television signals from the filter and amplifier circuits into digital form.

Similar language is also presented in claim 17 of *Twitchell et al.*, where the "down converter" and the "analog-to-digital converter" are listed as two separate elements. These passages explicitly and clearly indicate that the *Twitchell et al.* system does not use a digital-subharmonic-sampling downconverter but rather down converts the RF signal then digitizes the down-converted signal using an ADC.

To allege that *Twitchell et al.* teaches of applicant's claimed digital-subharmonic-sampling downconverter provides strong evidence of the improper use of hindsight. It is the applicant that teaches the use of a digital-subharmonic-sampling downconverter, not *Twitchell et al.* *Twitchell et al.* explicitly and clearly teaches the conventional and inferior technique of down converting using analog processing then converting the down converted analog television signals into digital form. This is precisely the technique that leads to problems in prior art predistortion circuits and is different from that which applicant claims in claim 1. Moreover, the use of a digital-subharmonic-sampling downconverter as claimed in claim 1 is not suggested by *Twitchell et al.* because *Twitchell et al.* teaches away from the use of a digital-subharmonic-sampling downconverter by explicitly teaching the conventional technique that relies upon analog down conversion processing which can be subject to distortion. Moreover, *Twitchell et al.* clearly fails to recognize the problem which results from the use of analog processing for down conversion. Accordingly, *Twitchell et al.* fails to teach or suggest of the invention as defined in applicant's claim 1, and claim 1 is deemed to be allowable. Reconsideration is respectfully requested.

Claims 2-4, 7-9, 11-15, and 18-20

Each of claims 2-4, 7-9, 11-15, and 18-20 depends, either directly or indirectly from claim 1. Accordingly, each of claims 2-4, 7-9, 11-15, and 18-20 is deemed allowable for the same reasons as set forth above in connection with claim 1. Reconsideration is respectfully requested.

Claim 11.

In addition, claim 11 is believed to be allowable for separate reasons from those discussed above in connection with claim 1. In particular, claim 11 recites that "said return-data stream exhibits a return resolution less than said forward resolution". The Office Action acknowledges that *Twitchell et al.* fails to teach this limitation. But the Office Action alleges that the return resolution being less than the forward resolution is inherently taught by *Twitchell et al.* Applicant strongly disagrees.

Well-established patent practice dictates that for a characteristic to be inherent, it must be necessarily present. As stated in Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991):

Anticipation by inherency requires that 1) the missing descriptive matter be "necessarily present" in the prior art reference and that 2) it would be so recognized by persons of ordinary skill in the art.

As further stated in Kropa v. Robie and Mahlman, 187 F.2d 150, 88 U.S.P.Q. 478 (C.C.P.A. 1951):

Inherency does not mean that a thing might happen. The fact that a procedure might yield an abrasive article is not enough. To rely on the filing date of an earlier application, the desired result must inevitably happen for the doctrine to apply. (Emphasis supplied)

It is clearly not necessary in *Twitchell et al.* that return resolution be less than forward resolution. Hence, it is not inherent. For example, the return resolution in *Twitchell et al.* may be equal to the forward resolution in *Twitchell et al.* by including an ADC in the feedback path with as many bits of resolution as are carried by the forward path passing through the *Twitchell et al.* adaptive linear equalizer 32, adaptive non-linear corrector 28, and adaptive linear equalizer 30. Alternatively, the return resolution in *Twitchell et al.* may be greater to the forward resolution in *Twitchell et al.* by including an ADC in the feedback path with more bits of resolution than are carried by the forward path passing through the *Twitchell et al.* adaptive linear equalizer 32, adaptive non-linear corrector 28, and adaptive linear equalizer 30.

The Office Action allegation that *Twitchell et al.* inherently teaches a return resolution less than a forward resolution is pure speculation and provides strong evidence of the impermissible use of hindsight in the examination of applicant's claims. It is applicant's specification that teaches the use of a return resolution less than a forward resolution, not *Twitchell et al.*

Since *Twitchell et al.* does not teach, suggest, or inherently demonstrate a transmitter where "said return-data stream exhibits a return resolution less than said forward resolution," applicant's claim 11 is deemed to recite a separate grounds for allowance from that set forth above in connection with claim 1. Reconsideration is respectfully requested.

Claims 8-9, 13-15, 18, and 20.

The Office Action indicated that claims 8-9, 13-15, 18, and 20 recited allowable subject matter, but objected to these claims as being dependent upon a rejected claim base. Claims 8-9, 13-15,

18, and 20 are unchanged in the present amendment. Accordingly, separate grounds are present for finding each of claims 8-9, 13-15, 18, and 20 allowable. Those separate grounds are the same allowable subject matters that were acknowledged in the Office Action as being allowable subject matters.

Claim 21

Claim 21 is unchanged by the present amendment. The Office Action rejected claim 21 under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Reconsideration is respectfully requested.

Claim 21 includes the following limitations:

...
a nonlinear predistorter coupled to said forward-data-stream source and configured to generate a nonlinear-predistorted-compensation stream from said forward-data stream;
a **combiner** coupled to said forward-data-stream source and said nonlinear predistorter and configured to generate a nonlinear-predistorted-forward-data stream from said forward-data stream and said nonlinear-predistorted-compensation stream;
a linear predistorter coupled to said combiner and configured to generate a linear-and-nonlinear-predistorted-forward-data stream, said linear-and-nonlinear-predistorted-forward-data stream being routed to analog-transmitter components; and
...

The Office Action alleges that *Twitchell et al.* teaches these limitations. In particular, the Office Action alleges that *Twitchell et al.* teaches these limitations at column 4 lines 54-56. Column 4, lines 52-56 from *Twitchell et al.* are reproduced below:

Also, the power amplifier 20 may be comprised of an array of amplifying devices. If a plurality of amplifying devices is present within the power amplifier 20, a combiner device is located adjacent to the high power filter to combiner amplifier device outputs.

Twitchell et al., as exemplified in this passage, teaches a very different structure from that which applicant claims in claim 21. This passage teaches a well-known technique for combining the power from multiple amplifiers by using a combiner at the outputs of the amplifiers. Such a combiner is located within a power amplifier. In contrast, the combiner claimed in applicant's claim 21 couples to the same forward-data stream source that drives the nonlinear predistorter. And, applicant's claimed combiner generates a nonlinear-predistorted-forward-data stream from the forward-data stream and the nonlinear-predistorted-compensation stream. The non-linear predistorted-compensation stream is generated by the nonlinear predistorter. Furthermore, the linear predistorter also couples to this combiner. This claimed structure is far different from a combiner at the output of parallel amplifiers within a transmitter's power amplifier. One example of a structure claimed by the limitations of claim 21 may be viewed at reference number 220 in applicant's Fig. 2.

Nor would it be obvious to modify the amplifier-output combiner of *Twitchell et al.* to more closely resemble applicant's claimed invention. A modification of *Twitchell et al.* to cause the *Twitchell et al.* combiner to operate as claimed in applicant's claim 21 would prevent the merging of amplifier power in a power amplifier, which is the purpose for which the *Twitchell et al.* combiner is provided in the first place. Moreover, the *Twitchell et al.* combiner is obviously a high power, analog signal combiner. Such a component, if placed between nonlinear and linear predistorters in a digital communications transmitter as claimed in claim 21, will simply cause the entire transmitter to fail. Such modifications are not suggested.

Since the amplifier-output combiner of *Twitchell et al.* neither teaches or suggests of the combiner limitation claimed in

applicant's claim 21, applicant's claim 21 is deemed allowable.
Reconsideration is respectively requested.

Claims 22-33

Each of claims 22-33 depends, either directly or indirectly, from claim 21. Accordingly, each of claims 22-33 is deemed allowable for the same reasons as are set forth above in connection with claim 21. Reconsideration is respectfully requested.

Claim 28.

In addition, separate grounds are present for finding claim 28 allowable beyond those grounds discussed above in connection with claim 21. Claim 28 was rejected under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Claim 28 recites that a "feedback section comprises a complex-digital-subharmonic-sampling downconverter," but the Office Action alleged that *Twitchell et al.* disclosed this limitation in its Fig. 5 and its element 46.

As discussed above in connection with claim 1, this allegation is in error. *Twitchell et al.* teaches away from this limitation by explicitly indicating that the *Twitchell et al.* transmitter first performs a down conversion then performs an analog-to-digital conversion on the down-converted signal. Accordingly, claim 28 is believed to be allowable for the reasons set forth above in connection with the discussion of claim 1 as well as for the reasons discussed above in connection with claim 21.

Claim 29.

In addition, separate grounds are present for finding claim 29 allowable beyond those grounds discussed above in connection with claim 21. Claim 29 was rejected under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Claim 29 recites that "said complex-return-data stream exhibits a return resolution less than said forward resolution," but the Office Action alleged that, while *Twitchell et al.* failed to teach this limitation, the limitation was inherently present in the *Twitchell et al.* transmitter.

As discussed above in connection with claim 11, this allegation is in error. It is applicant that teaches the lower resolution on the return-data stream when compared to the forward-data stream, not *Twitchell et al.* *Twitchell et al.* is entirely silent upon the subject of relative resolution of the forward- and return-data streams, and *Twitchell et al.* can function perfectly well if the return-data stream has equal or greater resolution than the forward-data stream. It is certainly not necessary for *Twitchell et al.* to use a reduced resolution for its return-data stream. Accordingly, claim 29 is believed to be allowable for the reasons set forth above in connection with the discussion of claim 11 as well as for the reasons discussed above in connection with claim 21.

Claims 22-23, 25, 30-33.

The Office Action indicated that claims 22-23, 25, and 30-33 recited allowable subject matter, but objected to these claims as being dependent upon a rejected claim base. Claims 22-23, 25, and 30-33 are unchanged in the present amendment. Accordingly, separate grounds are present for finding each of claims 22-23, 25, and 30-33 allowable. Those separate grounds are the same allowable subject matters that were acknowledged in the Office Action as being allowable subject matters.

Claim 42

Claim 42 is amended by the present amendment only to remove the "and" at the end of the linear predistorter element. The Office Action rejected claim 42 under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Reconsideration is respectfully requested.

Claim 42 includes the following limitations:

a linear predistorter coupled to said feedback section, said linear predistorter being configured to predistort a forward-data stream that digitally conveys information to compensate for linear distortion introduced downstream of said linear predistorter by said analog-transmitter components; and

a nonlinear predistorter coupled to said feedback section, said nonlinear predistorter being configured to predistort said forward-data stream to compensate for nonlinear distortion introduced downstream of said nonlinear predistorter by said analog-transmitter components; and

a **combiner** coupled to said linear predistorter and said nonlinear predistorter.

The Office Action alleges that *Twitchell et al.* teaches these limitations, just as it was alleged that *Twitchell et al.* taught a similar limitation in claim 21. As discussed above in connection with claim 21, the combiner taught by *Twitchell et al.* is an amplifier-output combiner that does not have the claimed cooperation with a linear predistorter and a nonlinear predistorter. That discussion set forth above in connection with claim 21 applies with equal force to claim 42. Accordingly, claim 42 is believed to be allowable for the same reasons set forth above in connection with claim 21. Reconsideration is respectfully requested.

Claims 43-47

Each of claims 43-47 depends, either directly or indirectly, from claim 42. Accordingly, each of claims 43-47 is deemed allowable for the same reasons as are set forth above in connection with claim 42. Reconsideration is respectfully requested.

Claim 43.

Separate grounds are present for finding claim 43 allowable beyond those grounds discussed above in connection with claim 42. Claim 43 was rejected under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* Claim 43 recites that "said feedback section comprises a digital-subharmonic-sampling downconverter," but the Office Action alleged that *Twitchell et al.* disclosed this limitation in its Fig. 5 and its element 46.

As discussed above in connection with claim 1, this allegation is in error. *Twitchell et al.* teaches away from this limitation by explicitly indicating that the *Twitchell et al.* transmitter first performs a down conversion then performs an analog-to-digital conversion of the down-converted signal. Accordingly, claim 43 is believed to be allowable for the reasons set forth above in connection with the discussion of claim 1 as well as for the reasons discussed above in connection with claim 42.

Claims 44-46.

The Office Action indicated that claims 44-46 recited allowable subject matter, but objected to these claims as being dependent upon a rejected claim base. Claims 44-46 are unchanged in the present amendment. Accordingly, separate grounds are present for finding each of claims 44-46 allowable. Those separate grounds are the same allowable subject matters that were

acknowledged in the Office Action as being allowable subject matters.

Claim 48

The Office Action rejected claim 48 under 35 U.S.C. 103(a) as being unpatentable over *Twitchell et al.* in view of *Sarca*. Claim 48 has been amended, among other things, to include the limitation of "forming an error signal by combining said forward-data stream and said return-data stream." In addition, the first- and second-estimation-and-convergence-algorithm-implementing activities were amended to explicitly recite responsiveness to the error signal.

Neither *Twitchell et al.* nor *Sarca* teach or suggest of the "forming an error signal by combining said forward-data stream and said return-data stream" limitation with corresponding responsiveness to the error signal in first- and second-estimation-and-convergence algorithms.

It is noted that claim 15 was indicated as reciting allowable subject matter, but was objected to as being dependent upon a rejected base claim. That allowable subject matter included the limitation of "forming an error signal by combining said delayed-forward-data stream and said return-data stream." Accordingly, the limitation added to claim 48 is similar to the limitation included in objected-to claim 15. While claim 15 also recited a "delay" feature, that feature is deemed to be irrelevant to the present discussion because nothing in *Twitchell et al.* or *Sarca* teach or suggest the "forming an error signal by combining said forward-data stream and said return-data stream" limitation.

Accordingly, claim 48 is believed to be allowable.
Reconsideration is respectfully requested.

Claims 49-52

Each of claims 49-52 depends, either directly or indirectly, from claim 48. Accordingly, each of claims 49-52 is deemed allowable for the same reasons as are set forth above in connection with claim 48. Reconsideration is respectfully requested.

Claim 51.

In addition, separate grounds are present for finding claim 51 allowable beyond those grounds discussed above in connection with claim 48. Claim 51 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Twitchell et al.* in view of *Sarca*. Claim 51 recites that "said return-data stream exhibits a return resolution less than said forward resolution." This is a similar limitation to one included above in claims 11 and 29, each of which was rejected as being anticipated by *Twitchell et al.* In connection with claims 11 and 29, the Office Action alleged the limitation was inherent in the teaching of *Twitchell et al.* But this allegation is in error, for the reasons set forth above in connection with the discussion of claim 11.

Now, in connection with claim 51, the Office Action alleges that this limitation is somehow taught by a combination of *Twitchell et al.* and *Sarca*, and reference is made to paragraph [0051] on page 4 in *Sarca*. But paragraph [0051] discusses how a so-called optimal algorithm can be changed to become adaptive. Neither this paragraph nor any other paragraph in *Sarca* discusses relative resolution between forward- and return-data streams as

set forth in applicant's claim 51. In short, *Sarca* is as silent as *Twitchell et al.* on the subject of relative resolution in the forward- and return-data streams in a digital transmitter with predistortion. Their combination cannot teach what neither teaches. The allegation that this feature of applicant's claim 51 is somehow taught by *Sarca*, either alone or in combination with *Twitchell et al.*, is pure speculation, and provides strong evidence of the impermissible use of hindsight obtained from applicant's specification. Accordingly, claim 51 is believed to have separate grounds for being found allowable. Reconsideration is respectfully requested.

Claims 49-50 and 52.

The Office Action indicated that claims 49-50 and 52 recited allowable subject matter, but objected to these claims as being dependent upon a rejected claim base. Claims 49 is unchanged in the present amendment, and claims 50 and 52 have been amended only to remain consistent with the amendment to claim 48. Accordingly, separate grounds are present for finding each of claims 49-50 and 52 allowable. Those separate grounds are the same allowable subject matters that were acknowledged in the Office Action as being allowable subject matters.

Claim 53.

Claim 53 is newly presented in the present Amendment. Claim 53 is reproduced below, with markings to show changes from the prior claim 1:

Claim 53 (new): A method of managing distortion in a digital communications transmitter in which at least a portion of said distortion is introduced by analog-transmitter components, said method comprising:

providing a linear predistorter located upstream of said analog-transmitter components;

providing a nonlinear predistorter located upstream of said analog-transmitter components;

obtaining a forward-data stream configured to convey digital information,
said forward-data stream being obtained upstream of said linear predistorter and
upstream of said nonlinear predistorter;

generating a return-data stream from a feedback signal obtained from said
analog-transmitter components;

training said linear predistorter ~~which is responsive~~ in response to said
forward-data stream and said return-data stream is located upstream of said analog-
~~transmitter components~~ to compensate for linear distortion introduced by said
analog-transmitter components; and

training said nonlinear predistorter ~~which is responsive~~ in response to said
forward-data stream and said return-data stream is located upstream of said analog-
~~transmitter components~~ to compensate for nonlinear distortion introduced by said
analog-transmitter components.

Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by *Twitchell et al.* New claim 53 differs from the prior claim 1 in that the forward-data stream to which the training activities is responsive is obtained upstream of the linear and the nonlinear predistorters. This structure is neither taught nor suggested in *Twitchell et al.* or in *Sarca*. In each of the *Twitchell et al.* and *Sarca* systems, predistortions are configured only in response to signals that are influenced by the predistorters themselves. Neither teaches obtaining a signal from upstream of the predistorters which has not been significantly influenced by the predistorters for use in configuring the predistortion that the predistorters apply. As a consequence, the *Twitchell et al.* and *Sarca* structures suffer from inaccuracy in the application of predistortion. Since claim 53 is neither taught nor suggested by *Twitchell et al.* or *Sarca*, either alone or in combination, claim 53 is deemed to be allowable.

Claims 54-55 and 57-63

Each of new claims 54-55 and 57-63 is directed to a claim that was objected-to in the Office Action. For each of new claims 54-55 and 57-63, the claim recites, in an independent form, all of

the limitations of the base claim and any intervening claims. In particular:

Claim 54 corresponds to objected-to claim 9. Claim 54 recites all of the limitations from claims 9 and 1.

Claim 55 corresponds to objected-to claim 10. But claim 55 differs from claim 10 in reciting a dependency from claim 54 rather than claim 9.

Claim 57 corresponds to claim 13. Claim 57 recites all of the limitations from claims 13 and 1.

Claim 58 corresponds to claim 14. Claim 58 recites all of the limitations from claims 14 and 1.

Claim 59 corresponds to claim 15. Claim 59 recites all of the limitations from claims 15 and 1.

Claim 60 corresponds to claim 16. But claim 60 differs from claim 16 in reciting a dependency from claim 59 rather than claim 15.

Claim 61 corresponds to claim 17. But claim 61 differs from claim 17 in reciting a dependency from claim 59 rather than claim 15.

Claim 62 corresponds to claim 20. Claim 62 recites all of the limitations from claims 20 and 1.

Claim 63 corresponds to claim 49. Claim 63 recites all of the limitations from claims 49 and 48.

Claim 56

New claim 56 corresponds to originally-filed claim 11. In particular, claim 56 includes all limitations from prior claims 11 and 1. The Office Action rejected the prior claim 11 under 35. U.S.C. 102(b) as being anticipated by *Twitchell et al.* Prior claim 11, and new claim 56 include the limitation of "said return-data stream exhibits a return resolution less than said forward resolution." This limitation was discussed above in connection


with claim 11 as being a separate grounds for finding claim 11 allowable.

New claim 56 is believed to be allowable for the same reasons as are set forth above as separate grounds in connection with the discussion of claim 11. *Twitchell et al.* is entirely silent on this limitation, as acknowledged in the Office Action, and this limitation is not inherent in the operation of the *Twitchell et al.* transmitter.

Conclusion

Applicant believes that the foregoing amendments and remarks are fully responsive to the rejections and/or objections recited in the 9 November 2005 Office Action and that the present application is now in a condition for allowance. Accordingly, reconsideration of the present application is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script, reading "Lowell W. Gresham". The signature is written in dark ink and is positioned above a horizontal line.

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